

WHAT IS CLAIMED IS:

1. A light beam scanning apparatus comprising:
light emitting means for emitting a light beam;
scanning control means for controlling scanning of
5 light beam emitted by the light emitting means;
light quantity detecting means for detecting the
quantity of light in the light beam emitted by the
light emitting means;
light quantity control signal output means for
10 outputting a light quantity control signal that
performs control such that the quantity of light in the
light beam emitted by the light emitting means is kept
fixed on the basis of a result of detection of the
quantity of light in the light beam executed by the
15 light quantity detecting means; and
light emission control means for controlling a
light emission timing for the light beam from the light
emitting means on the basis of image data and
controlling the quantity of light in the light beam
20 emitted by the light emitting means on the basis of the
light quantity control signal while the light emission
timing is being controlled.
2. The light beam scanning apparatus according to
claim 1, wherein the light emission control means
25 performs first light quantity control which controls
forced emission of the light beam from the light
emitting means at a predetermined time outside the

period in which the light emission timing is controlled on the basis of the image data and which controls the quantity of light in the light beam from the light emitting means on the basis of the light quantity control signal, and performs second light control which controls the light emission timing for the light beam on the basis of the image data and which controls the quantity of light in the light beam from the light emitting means on the basis of the light quantity control signal while the light emission timing is being controlled.

3. The light beam scanning apparatus according to claim 1, wherein the light emission control means controls the quantity of light in the light beam from the light emitting means on the basis of the light quantity control signal in association with a light emission period which corresponds to the control of the light emission timing for the light beam based on the image data and which last a predetermined period or longer.

4. The light beam scanning apparatus according to claim 1, wherein on the basis of a delay in start of light quantity control determined from characteristics of the light quantity control signal, the light emission control means starts light quantity control based on the light quantity control signal at an appropriate time to compensate for the delay.

5. The light beam scanning apparatus according to claim 1, wherein on the basis of a delay in end of light quantity control determined from characteristics of the light quantity control signal, the light
5 emission control means ends light quantity control based on the light quantity control signal at an appropriate time to compensate for the delay.

6. The light beam scanning apparatus according to claim 1, wherein the light emitting means includes a
10 plurality of light sources which emit respective light beams,

the scanning control means controls scanning of the plurality of light beams emitted by the respective light sources,

15 the light quantity detecting means includes a plurality of light quantity detectors which individually detect the quantity of light in the respective light beams emitted by the corresponding light sources,

20 the light quantity control signal output means outputs a plurality of light quantity control signals that perform control such that the quantity of light in the plurality of light beams emitted by the respective light sources is kept fixed on the basis of a plurality
25 of results of detection of the quantity of light executed by the respective light quantity detectors, and

the light emission control means controls light emission timings for the plurality of light beams from the respective light sources on the basis of image data and controls the quantity of light in the plurality of light beams emitted by the respective light sources on the basis of the light quantity control signal while the light emission timings are being controlled.

7. The light beam scanning apparatus according to claim 6, wherein the light emission control means controls the quantity of light in the plurality of light beams from the respective light sources on the basis of the light quantity control signal in association with a light emission period which corresponds to the control of the light emission timings for the plurality of light beams based on the image data and which last a predetermined period or longer.

8. The light beam scanning apparatus according to claim 1, wherein the light emitting means includes a plurality of light sources which emit respective light beams,

the scanning control means controls scanning of the plurality of light beams emitted by the respective light sources,

the light quantity detecting means includes a light quantity detector which detects the quantity of

light in all of the plurality of light beams,

the light quantity control signal output means
outputs a light quantity control signal that performs
control such that the quantity of light in the light
5 beam emitted by only one of the plurality of light
sources is kept fixed on the basis of a result of
detection of the quantity of light executed by the
light quantity detector while the only one light source
is emitting the light beam, and

10 the light emission control means controls light
emission timings for the plurality of light beams from
the respective light sources on the basis of image data
and controls the quantity of light in the light beam
emitted by the only one of the plurality of light
15 sources on the basis of the light quantity control
signal while the light emission timings are being
controlled.

9. The light beam scanning apparatus according to
claim 7, wherein the light emission control means
20 controls the quantity of light in one light beam from
the only one of the plurality of light sources on
the basis of the light quantity control signal in
association with a light emission period which
corresponds to the light emission timing for
25 the light beam based on the image data from the only
one light source and which last a predetermined period
or longer.

10. A light beam scanning apparatus comprising:
light emitting means for emitting a light beam;
scanning control means for controlling scanning of
the light beam by subjecting the light beam to a
conformal speed motion;

converting means for allowing the light beam to
pass through to convert the conformal rate motion of
the light beam into a uniform rate motion; and

light quantity control means for controlling the
quantity of light in the light beam emitted by the
light emitting means on the basis of a transmittance of
the converting means so that the quantity of light in
the light beam emitted by the light emitting means
which quantity is varied by the effect of the
transmittance is kept fixed.

11. The light beam scanning apparatus according to
claim 10, wherein the converting means continuously
varies the quantity of light in the light beam in
association with the conversion of the conformal rate
motion of the light beam into the uniform rate motion,
and

the light quantity control means continuously
controls the quantity of light in the light beam on the
basis of the transmittance in association with the
continuous variation in the quantity of light in the
light beam so that the quantity of light in light beams
reaching an image carrier is kept fixed.

12. The light beam scanning apparatus according to claim 10, wherein the light beam incident on the converting means in accordance with the conformal rate motion branches to different optical paths upon passing
5 through the converting means,

the quantity of light in the light beam converted by the converting means is continuously varied under the effect of the different transmittances of the optical paths in the converting means, and

10 the light quantity control means continuously controls the quantity of light in the light beam on the basis of the different transmittances of the optical paths in association with the continuous variation in the quantity of light in the light beam so that the
15 quantity of light in light beams reaching a image carrier is kept fixed.

13. The light beam scanning apparatus according to claim 10, wherein the converting means continuously varies the quantity of light in the light beam in
20 association with the conversion of the conformal rate motion of the light beam into the uniform rate motion, and

the light quantity control means controls the quantity of light in the light beam step by step on the
25 basis of the transmittance in association with the continuous variation in the quantity of light in the light beam so that the quantity of light in light beams

reaching a image carrier is averaged.

14. The light beam scanning apparatus according to claim 10, wherein the light beam incident on the converting means in accordance with the conformal rate motion branches to different optical paths upon passing through the converting means,

the quantity of light in the light beam converted by the converting means is continuously varied under the effect of the different transmittances of the optical paths in the converting mans, and

the light quantity control means controls the quantity of light in the light beam step by step on the basis of the different transmittances of the optical paths in association with the continuous variation in the quantity of light in the light beam so that the quantity of light in light beams reaching a image carrier is averaged.

15. An image forming apparatus to which the light beam scanning apparatus according to claim 1 is applied, the image forming apparatus comprising:

image forming means for forming an image on the basis of a light beam with its light emission timing and quantity of light controlled by the light emission control means.

16. An image forming apparatus to which the light beam scanning apparatus according to claim 10 is applied, the image forming apparatus comprising:

image forming means for forming an image on the basis of a light beam with its quantity of light controlled by the light quantity control means.